

Singapore

Measuring Innovation in Education 2019

What has changed in the classroom?

Measuring innovation in education and understanding its process is essential to improve the quality of the education sector. We need to examine whether, and how, practices are changing within classrooms and educational organisations and how students use learning resources. We should know much more about how teachers change their professional development practices, how schools change their ways to relate to parents, and, more generally, to what extent change and innovation are linked to better educational outcomes. This would help policy makers to better target interventions and resources, better understand where they need to get better evidence, and get quick feedback on whether reforms do change educational practices as expected. This would also enable us to better understand the role of innovation in education.

Key findings for OECD education systems

- On average, there has been a moderate level of innovation in OECD education systems, perhaps more than one would often acknowledge, but probably less than what would be needed to really improve education systems
- Many education systems have experienced high levels of technology-related innovation, with a slight decrease in access to computers and a significant increase of the use of ICT in pedagogical practices. Furthermore, on average, access to laptops increased by 17 % points between 2009 and 2015.
- In many countries, peer learning has spread as a teacher professional development practice – increasing by 40 % points for the OECD on average.
- While many policy debates have focused on “21st century skills” in the past decade, rote learning practices have spread to a similar extent as active learning practices, increasing by 28 and 26 % points respectively.
- While in some practices there have been similar patterns across education systems, in most of them there does not seem to be an international convergence on pedagogical and educational practices.
- Innovation is not an end in itself, and some changes have not always translated into improvements in educational outcomes.

Methodology

The book examines the diffusion or contraction of about 150 educational practices from 2006 to 2016 by analysing data from three international education datasets – Trends in International Mathematics and Science Study (TIMSS), Progress in International Reading Literacy Study (PIRLS), and the Programme on International Student Assessment (PISA). Beyond identifying the areas in which each education system has demonstrated emerging or changing organisational and pedagogical practices over a decade, the book synthesises education systems’ intensity of innovation by computing composite indices for countries for which enough information is available. Based on effects sizes (multiplied by 100), the education innovation indices propose a continuum, with innovation intensity being considered as relatively small when below 20, moderate between 20 and 40, and large above 40. More details on the methodology can be found in the report.

Ask questions

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Find the report

<https://tinyurl.com/MIE2019>

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What has changed in the classroom?



Singapore **30**
OECD average **30**

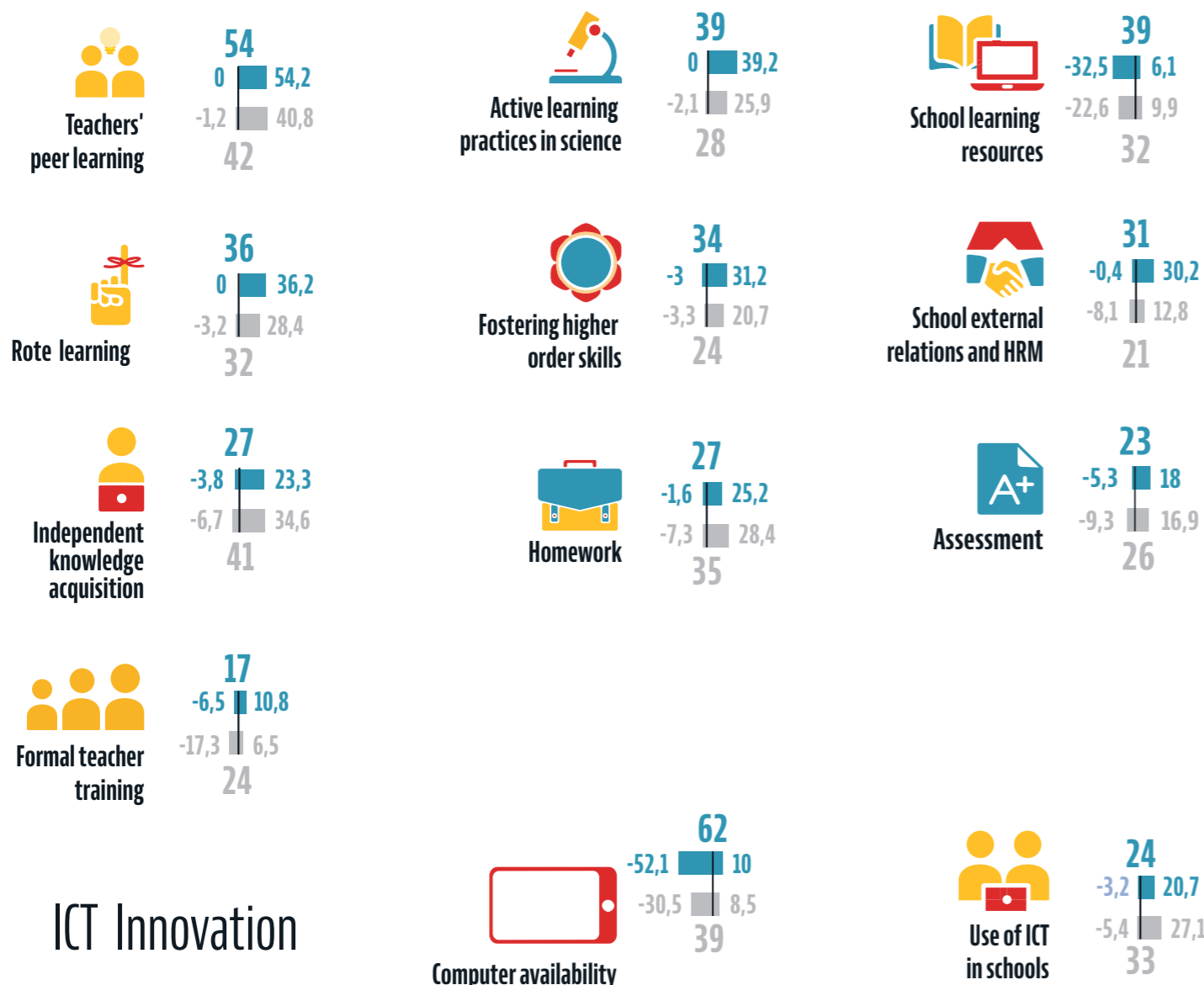
Education Innovation Index



Innovation in education by category



Innovation in education by type of practice



ICT Innovation

The indices indicate innovation intensity from small (below 20) to large (over 40). When displayed, positive and negative values show how much of the index corresponds to an expansion and contraction of the covered practices between 2006 and 2016. Authors' calculations based on the PIRLS, PISA and TIMSS databases.

Singapore

Between 2006 and 2016, Singapore has experienced a moderate level of innovation in education, on par with the OECD average. Innovation has been almost equally distributed between primary and secondary education. Changes in maths and science practices were moderate (though below the OECD average in maths), and small in reading, an area where practices remained relatively stable. Access to computers in school decreased, to an even greater extent than in OECD systems, while the use of ICT spread a bit, though less than in the OECD area. Major areas of innovation lay in the spread of teacher peer learning practices and the scale up of active learning practices in science, rote learning practices, as well as practices fostering students' higher order skills.

Some trends in educational outcomes



- Academic outcome in primary reading
- Academic outcome in primary and secondary maths
- Academic outcome in secondary science
- Student satisfaction in primary education
- Student enjoyment in primary and secondary science lessons
- Teachers' collective ambition for their students in primary and secondary education
- Equity of academic outcomes in secondary science
- Equity of academic outcomes in secondary maths



- Academic outcome in primary science
- Student satisfaction in secondary education
- Teachers' collective self-efficacy in primary and secondary education
- Equity of academic outcomes in primary reading
- Equity of academic outcomes in primary science
- Equity of academic outcomes in primary maths

Practices that changed the most

Primary

- 44 more students in 100 frequently observed and described natural phenomena in science lessons, reaching a **59%** coverage
- 44 fewer students in 100 in maths and **38** less in reading had computers (including tablets) available to use during lessons, reaching a **37%** and **55%** coverage respectively
- 31 more students in 100 had teachers with assistance available to work with students who have difficulty in reading, reaching a **32%** coverage

Secondary

- 38 more students in 100 in maths and **38** more in science systematically discussed homework in class, reaching a **68%** and **73%** coverage respectively
- 36 more students in 100 frequently observed and described natural phenomena in science lessons, reaching a **54%** coverage
- 33 more students in 100 had portable laptops or notebooks available for use at school, reaching a **79%** coverage

